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Title : Evaluation of a method using blubber tissue for the determination of pregnancy in odontocetes

Category : Ecology

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Abstract : Mansour et al. (2002) demonstrated that blubber progesterone levels can be used to examine pregnancy in mysticetes. The applicability of this technique to odontocetes, and effects of sample size on progesterone levels was examined in this study. Blubber of marine mammals is stratified both in its fatty acid composition and contaminants profile. The outer layer is likely the most stable layer, and probably serves mainly as insulation, whereas the inner layer is mobilized more readily when energy intake is limited. The outer layer can be collected through biopsies, and might be useful in determining pregnancy rates of wild cetaceans. However, its accuracy in indicating pregnancy status remains unknown, and was investigated in this study.
Blubber samples were collected from freshly killed or beach-cast beluga whales of known reproductive status, age and sex. Progesterone levels in lipid-extracted blubber tissues were determined for 10 females (5.5-18 yrs-old) and 1 control male (24 yrs-old) using radioimmunoassay. Of these female individuals, 3 were pregnant, 1 was pregnant and lactating, 1 was lactating, 1 had recently given birth, and 4 appeared non-pregnant. Progesterone levels were significantly different between BIG (c.a. 1.0 g) and SMALL (c.a. 0.3 g) blubber samples (paired t-test, $P = 0.01$), with smaller samples reflecting more accurately observed pregnancy status of females. No significant differences in progesterone levels were observed between blubber layers (paired t-tests, $P > 0.05$). Nevertheless, a gradient in progesterone levels between the three blubber layers was observed in two females, suggesting a possible delay in appearance or disappearance of progesterone in the outer layer. Although a larger sample size is clearly needed to clarify progesterone metabolism in the blubber of cetaceans, these preliminary results are encouraging and show promise for the evaluation of reproductive status in odontocetes through the analysis of progesterone levels in blubber biopsies.